

1/23

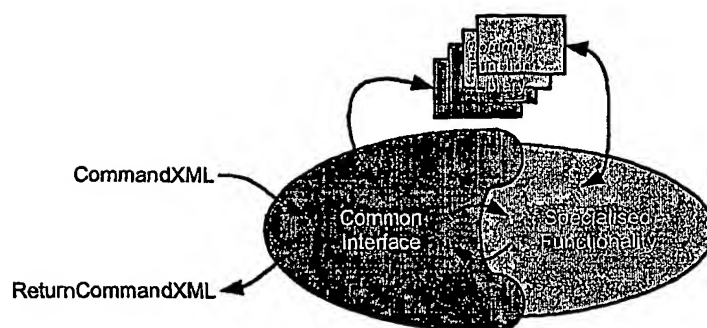


Figure 1 – Data Collector System Object

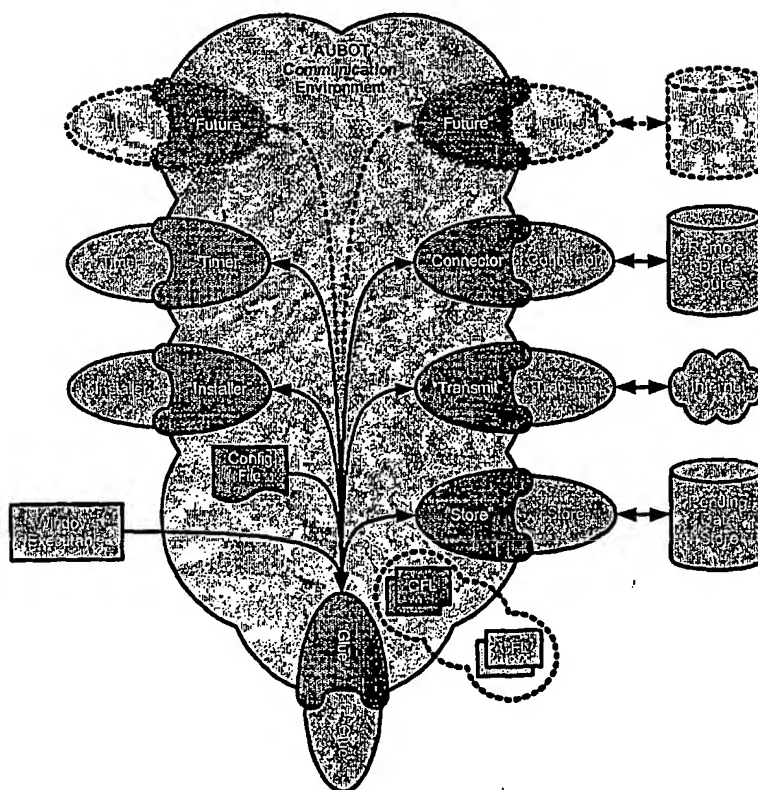


Figure 2- Data Collector System Communication Environment

2/23

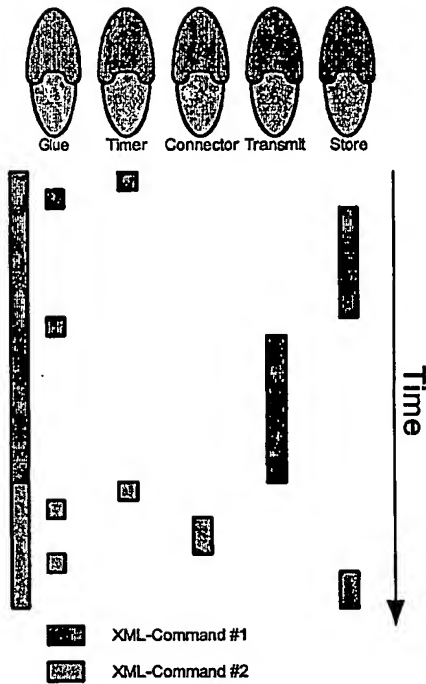


Figure 3 - Synchronous

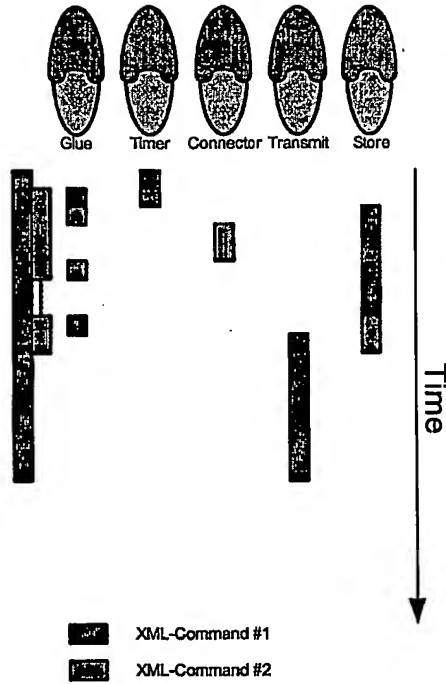


Figure 4 - Asynchronous

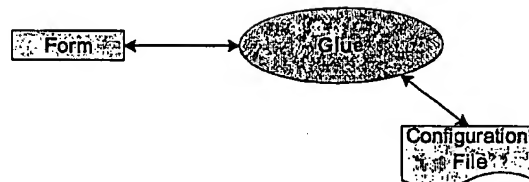


Figure 5 Core system

3/23

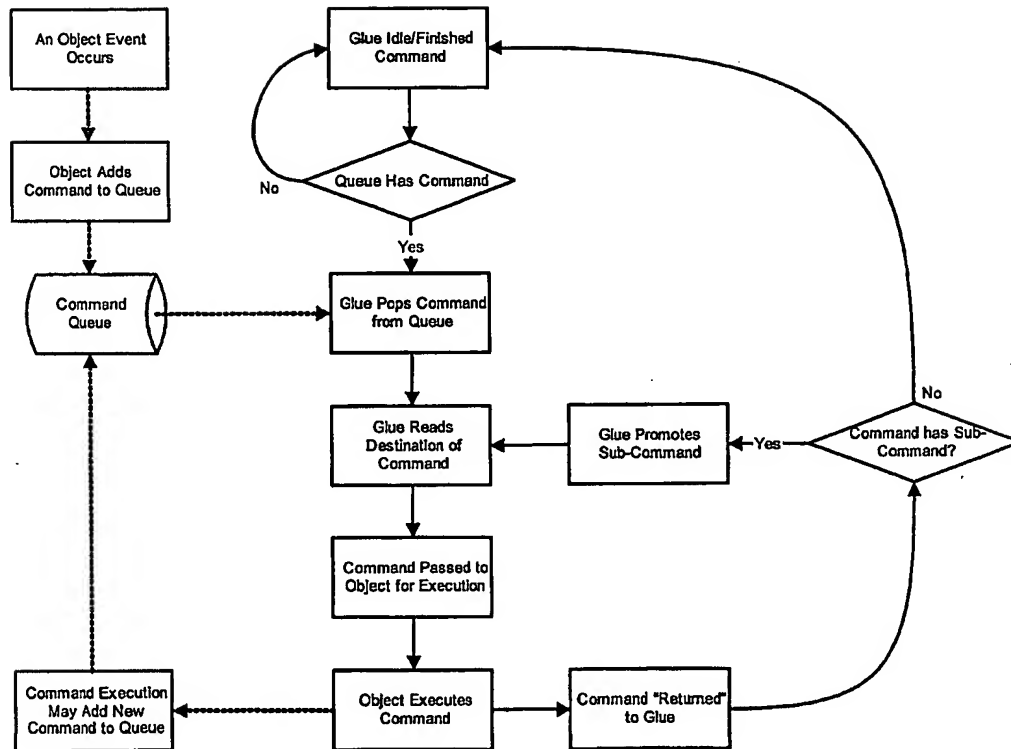
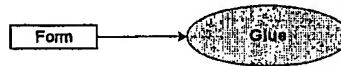
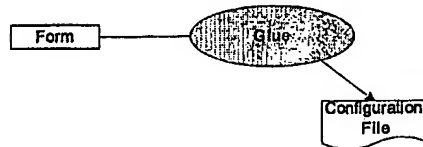


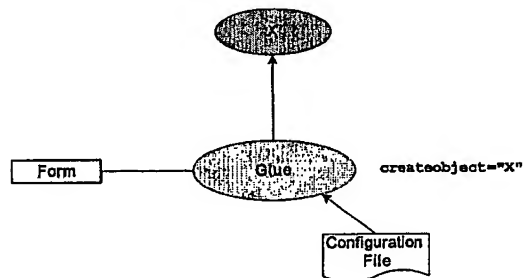
Figure 6 Process of command execution

4/23

1 Form at startup

2 Form creates Glue

3 Glue reads configuration file

4 Glue instructed to create object 'X'

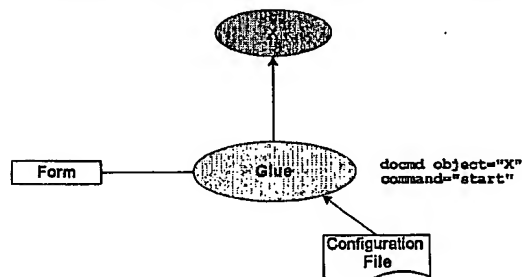
5 Glue passes start command to object 'X' for execution

Figure 7 Example of Glue executing and passing commands at startup

5/23

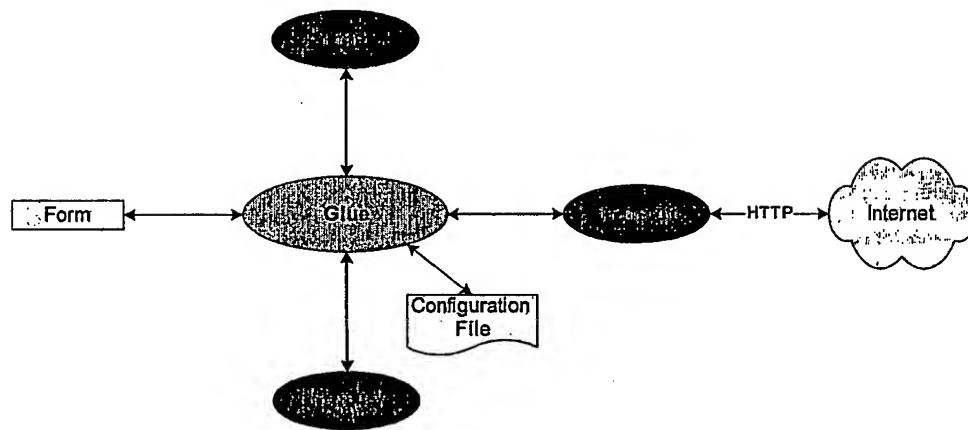


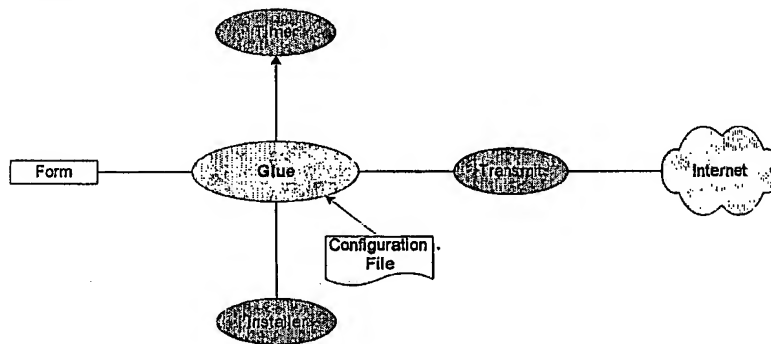
Figure 8 Base system

6/23

Figure 9 establishing a heartbeat

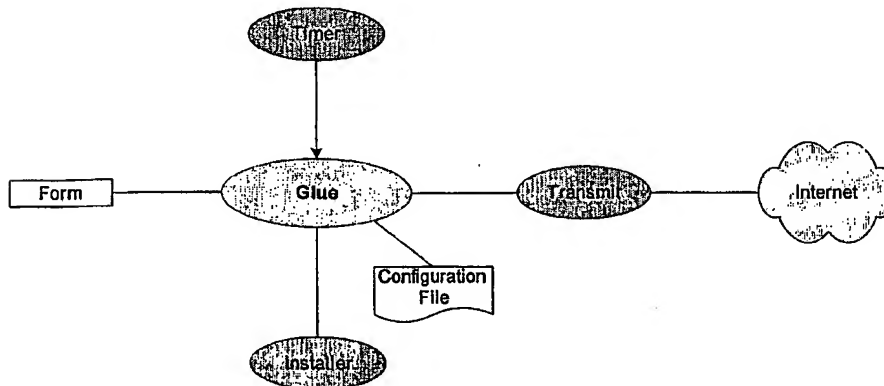
1 Timer receives instructions from Glue to send (heartbeat) command every 30 seconds

```
<docmd object="Timer" command="Register" interval="30"
units="Seconds">
<data type="Command">
<docmd object="Transmit" command="HeartBeat" />
</data>
</docmd>
```

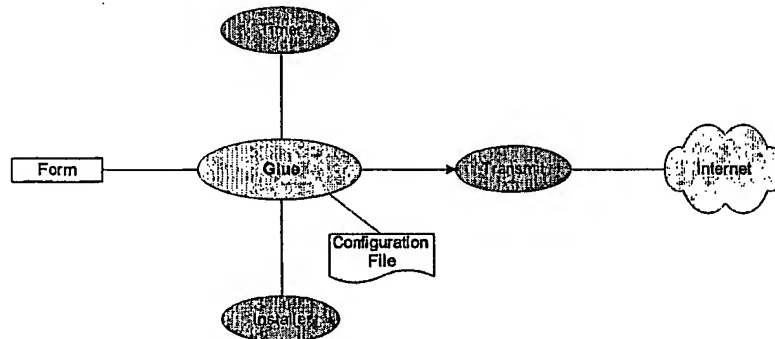
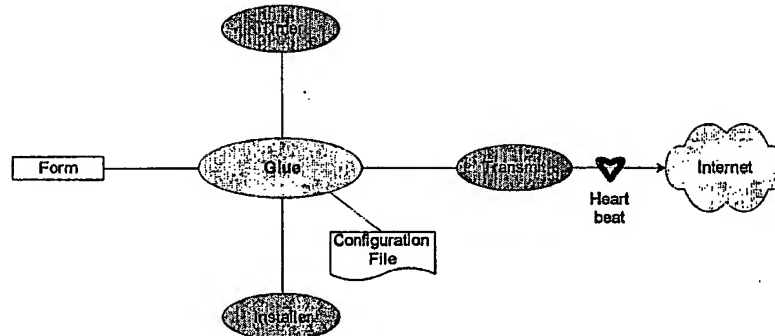
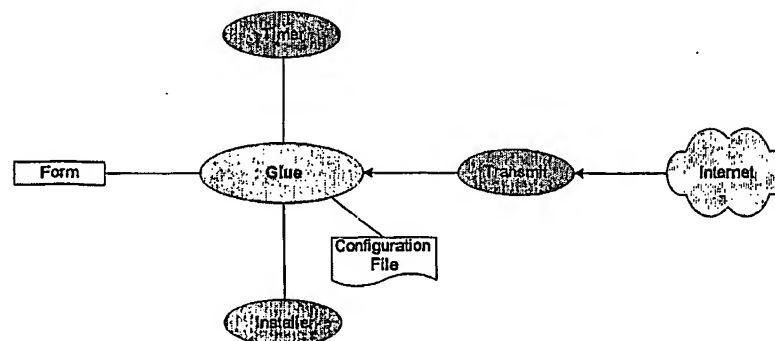


30 seconds passes

2 Timer informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command



7/23

3 Glue passes command to Transmit`<docmd object="Transmit" command="HeartBeat" />`**4 Transmit sends heartbeat****5a Heartbeat returns with "Nothing"**`<docmd object="Glue" command="Nothing" />`

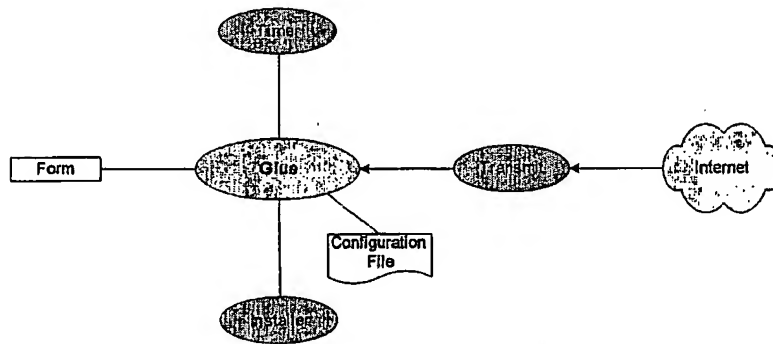
8/23

5b Heartbeat returns with commands to execute

```

<docmd object="Installer" command="Install" filename="object.dll">
  <data type="DLL">'encoded DLL'</data>
  <data type="SuccessCommand">
    <docmd object="Glue" command="AddSystemData">
      <docmd object="Transmit" command="Dock" datatype="Success"/>
      <data type="Success">
        <message writeout="object.dll installed successfully."/>
      </data>
    </docmd>
  </data>
</docmd>
<data type="FailureCommand">
  <docmd object="Glue" command="AddSystemData">
    <docmd object="Transmit" command="Dock" datatype="Failure"/>
    <data type="Failure">
      <message writeout="object.dll install failed."/>
    </data>
  </docmd>
</data>
</docmd>

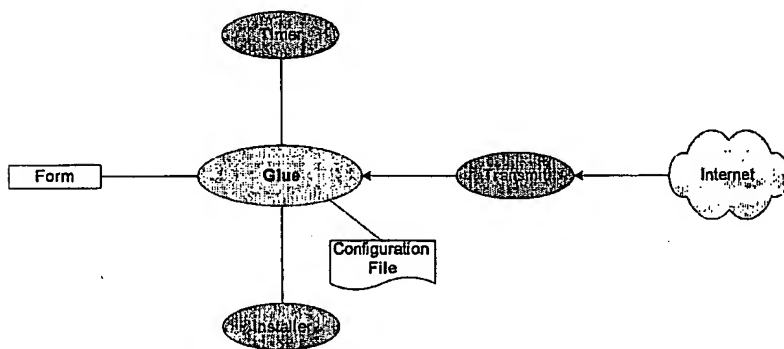
```

**Figure 9 establishing a heartbeat**

9/23

Figure 10 Installation of new object

1 Transmit receives command and passes to Glue. Glue adds command to queue to be eventually popped off as the current command



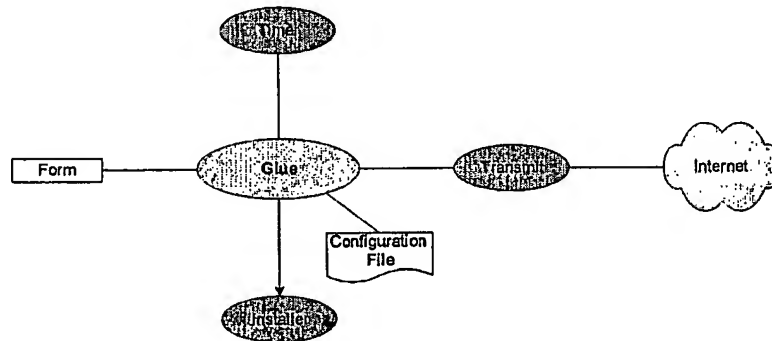
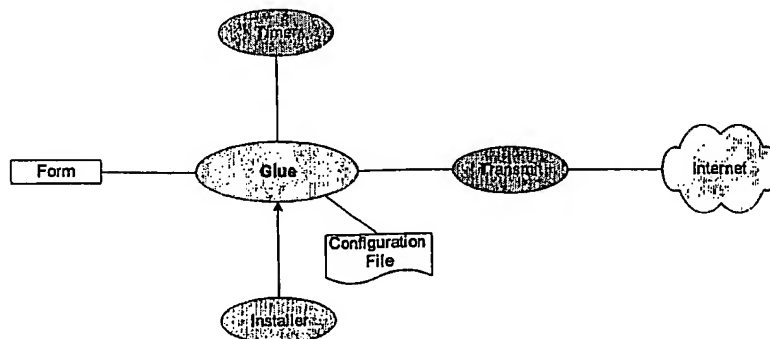
10/23

2 Glue passes command to Installer

```

<docmd object="Installer" command="Install" filename="object.dll">
  <data type="DLL">'encoded DLL'</data>
  <data type="SuccessCommand">
    <docmd object="Transmit" command="Dock" datatype="Success"/>
    <data type="Success">
      <message writeout="object.dll installed successfully."/>
    </data>
  </data>
  <data type="FailureCommand">
    <docmd object="Transmit" command="Dock" datatype="Failure"/>
    <data type="Failure">
      <message writeout="object.dll install failed."/>
    </data>
  </data>
</docmd>

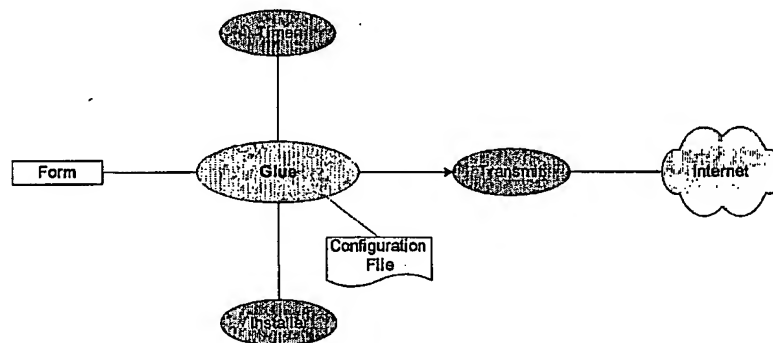
```

**3 Installer attempts to install new object. As install was successful, Installer passes the command contained within the "SuccessCommand" datatype to the queue. The current command is passed back to Glue****Figure 10 Installation of new object**

11/23

- 4 Glue completes execution of the current command. Eventually the "success" command is popped off as the current command and passed to Transmit

```
<docind object="Transmit" command="Dock" datatype="Success"/>
<data type="Success">
  <message writeout="object.dll installed successfully."/>
</data>
```



- 5 Transmit sends status and then passes the command back to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue

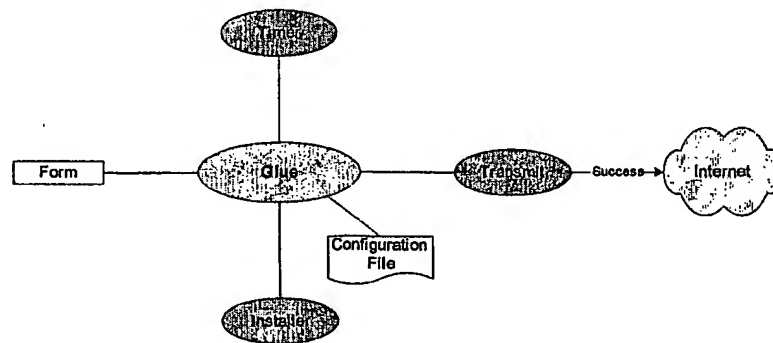


Figure 10 Installation of new object

12/23

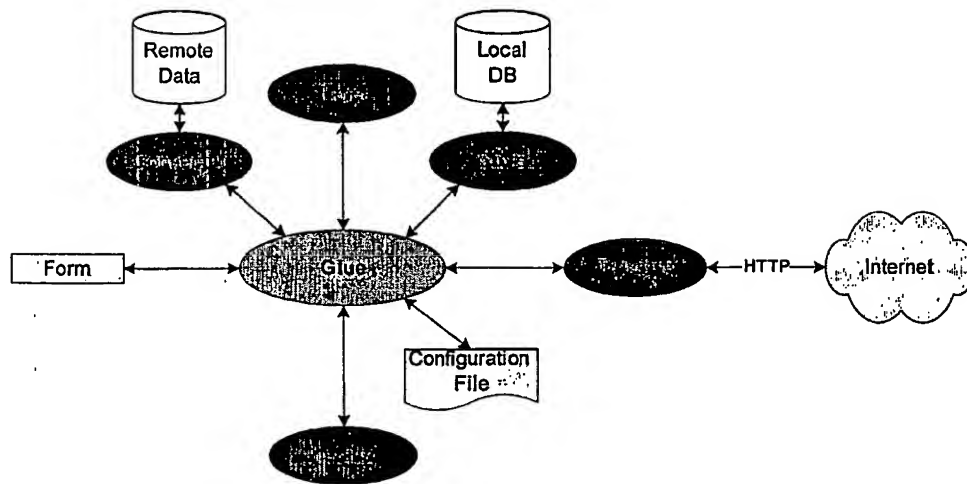


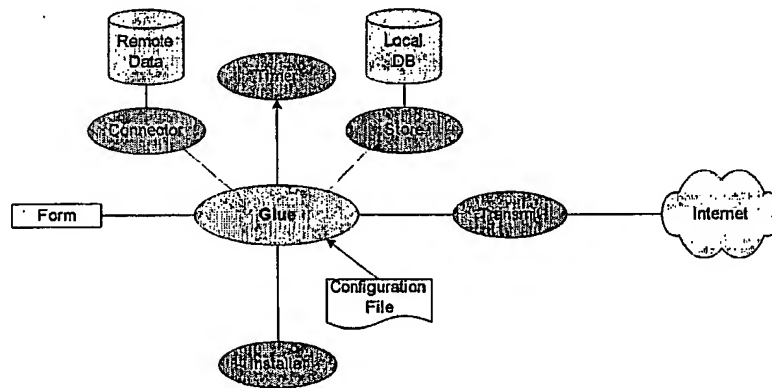
Figure 11 Functional system

13/23

Figure 12 Retrieving data at set time intervals

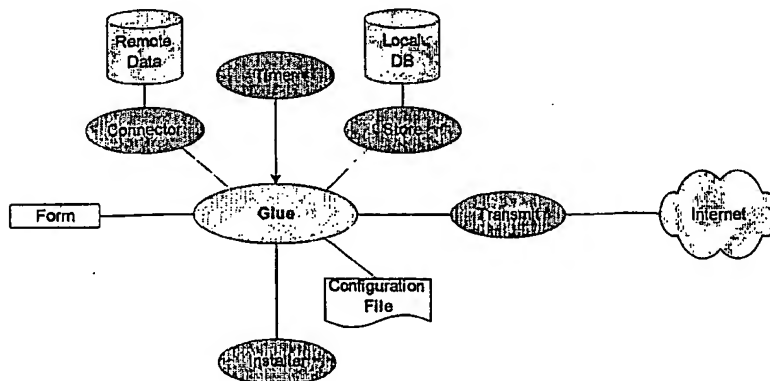
1 Timer receives instructions from Glue to send (Get-Add) command every minute

```
<doccmd object="Timer" command="Register" interval="1" units="Minutes"
synchtime="00:00">
  <data type="Command">
    <doccmd object="Connector" command="GetInfo">
      <doccmd object="Store" command="AddItem" datatype="Info" />
    </doccmd>
  </data>
</doccmd>
```



1 minute passes

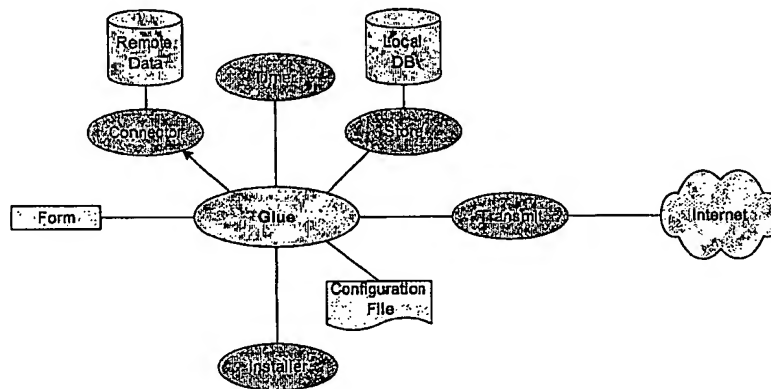
2 Timer informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command



14/23

3 Glue passes "GetInfo" command to Connector

```
<docmd object="Connector" command="GetInfo">
  <docmd object="Store" command="AddItem" datatype="Info" />
</docmd>
```



17/23

4 Connector retrieves data from remote data source and passes to Glue with current command. Glue checks if command contains sub-commands, and then promotes the first sub-command as the current command

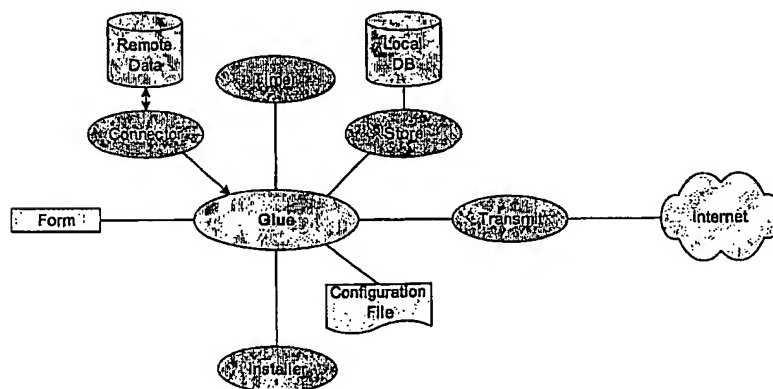
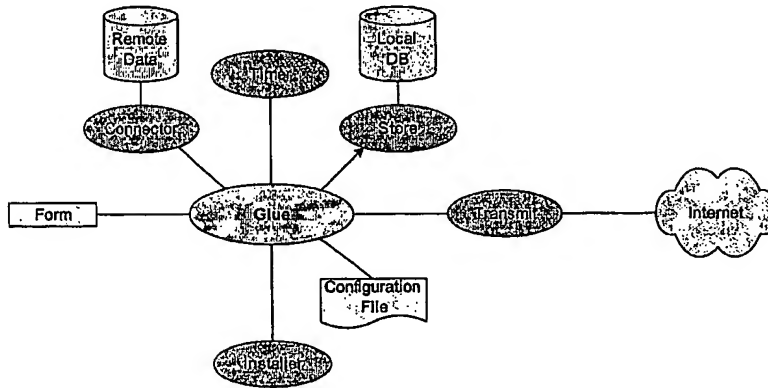


Figure 12 Retrieving data at set time intervals

15/23

5 Glue passes "AddItem" command to Store

```
<docmd object="Store" command="AddItem" datatype="Info" />
```



6 Store adds data to local database and passes message back to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue

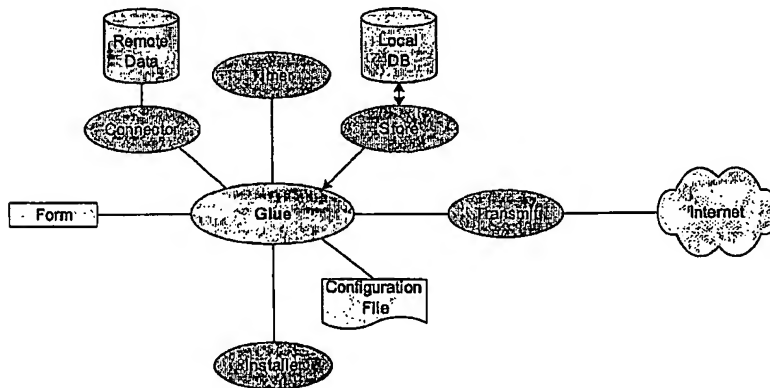


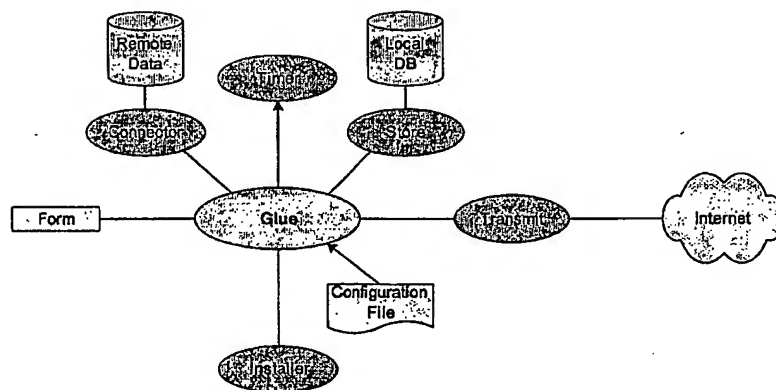
Figure 12 Retrieving data at set time intervals

16/23

Figure 13 Sending data at set time intervals

1 Timer receives instructions from Glue to send a (Bundle-Dock) command every four hours

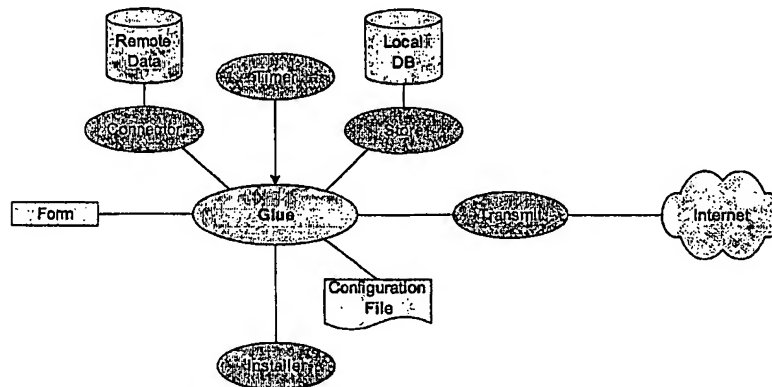
```
<docmd object="Timer" command="Register" interval="4" units="Hours"
synchtime="00:00">
  <data type="Command">
    <docmd object="Store" command="BundleCurrentItems">
      <docmd object="Transmit" command="Dock" datatype="Bundle"/>
    </docmd>
  </data>
</docmd>
```



4 hours pass

17/23

2 Timer informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command



3 Glue passes "BundleCurrentItems" command to Store

```
<docmd object="Store" command="BundleCurrentItems">
  <docmd object="Transmit" command="Dock" datatype="Bundle" />
</docmd>
```

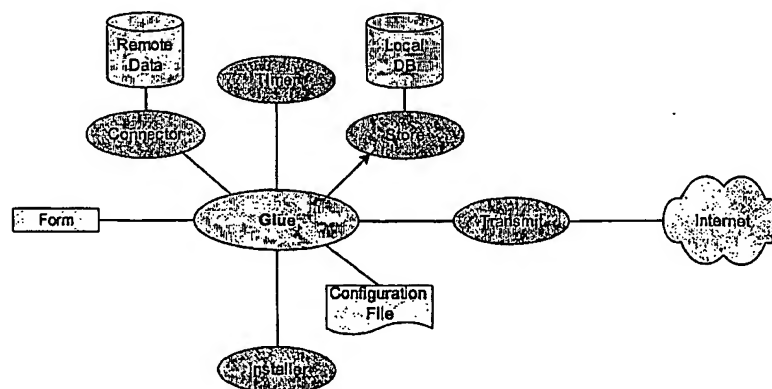
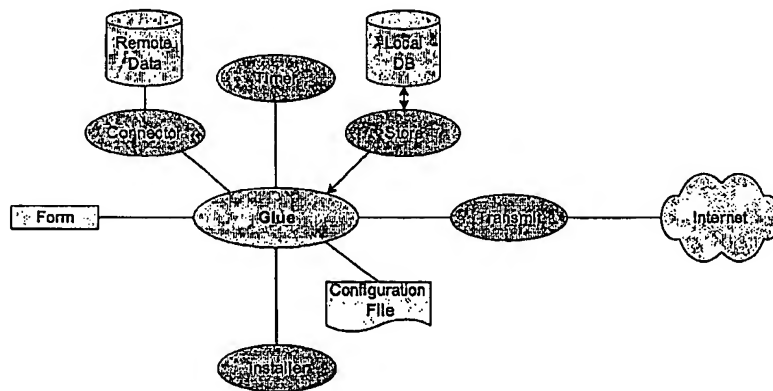


Figure 13 Sending data at set time intervals

18/23

-
- 4 Store bundles current items in the local database and passes bundle and current command back to Glue. Glue checks if command contains sub-commands, and then promotes the first sub-command as the current command



-
- 5 Glue passes "Dock" command to Transmit

`<docmd object="Transmit" command="Dock" datatype="Bundle" />`

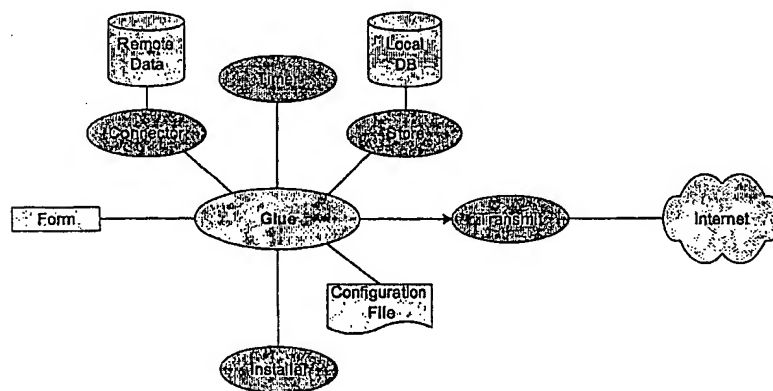
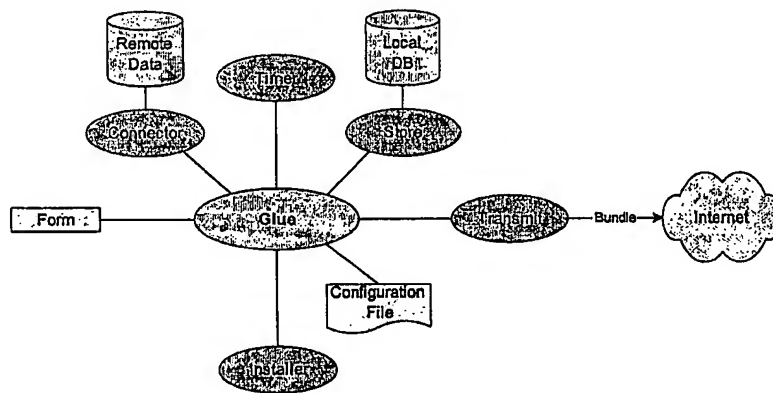


Figure 13 Sending data at set time intervals

19/23

6 Transmit sends bundle

7 Transmit returns bundle and commands to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue

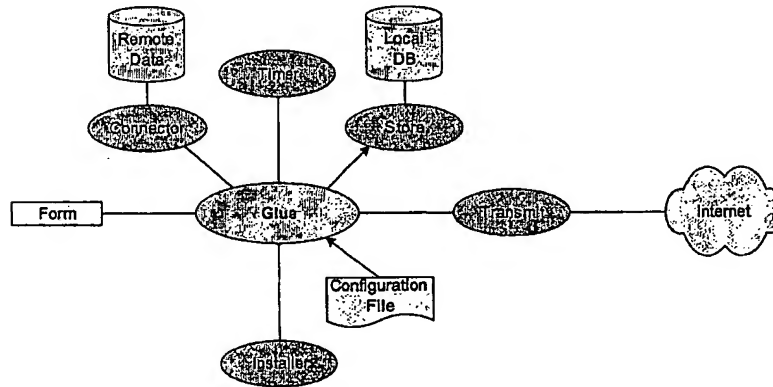
Figure 13 Sending data at set time intervals

20/23

Figure 14 the sending of data bundles at set capacity levels.

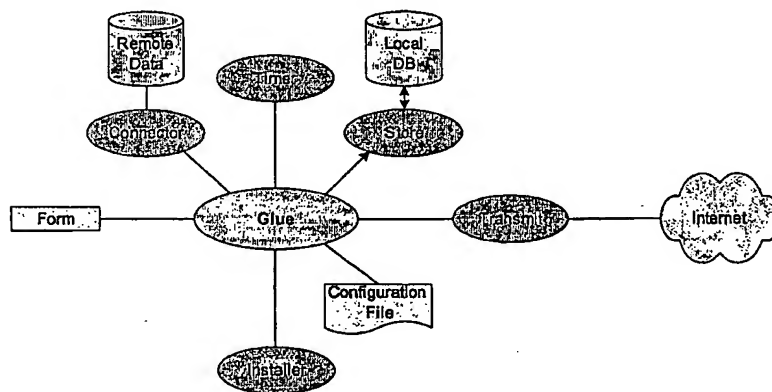
1 Store receives instructions from Glue to send a (Bundle-Dock) command when local data base contains 200 data items

```
<docmd object="Store" command="SetTriggers" itemscount="200" itemsizekbs="800">
  <data type="Command">
    <docmd object="Store" command="BundleCurrentItems">
      <docmd object="Transmit" command="Dock" datatype="Bundle">
    </docmd>
  </data>
</docmd>>
```



21/23

2 200th data item is added to the local database



3 Store processes own commands first (ie. bundles) then informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command

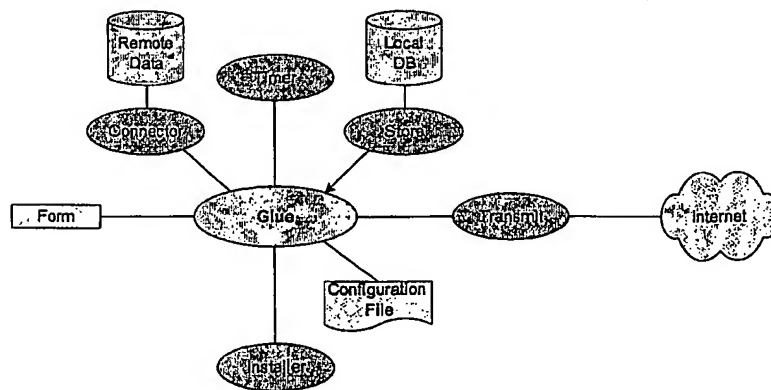
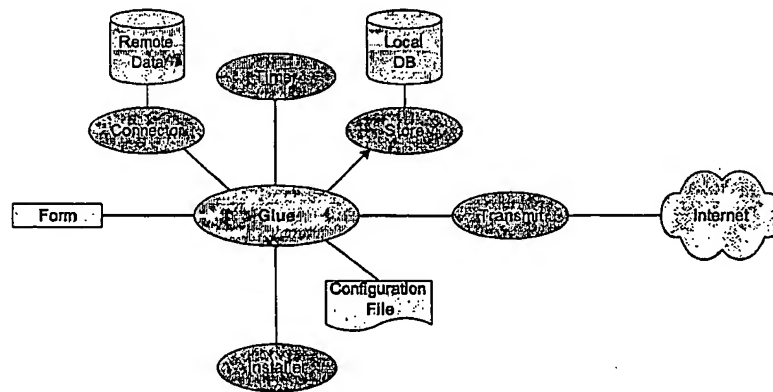


Figure 14 the sending of data bundles at set capacity levels.

22/23

4 Glue passes "BundleCurrentItems" command to Store

```
<docmd object="Store" command="BundleCurrentItems">
  <docmd object="Transmit" command="Dock" datatype="Bundle">
</docmd>
```



5 Store bundles items in local database and passes back to Glue with command. Glue checks if command contains sub-commands, and then promotes the first sub-command as the current command

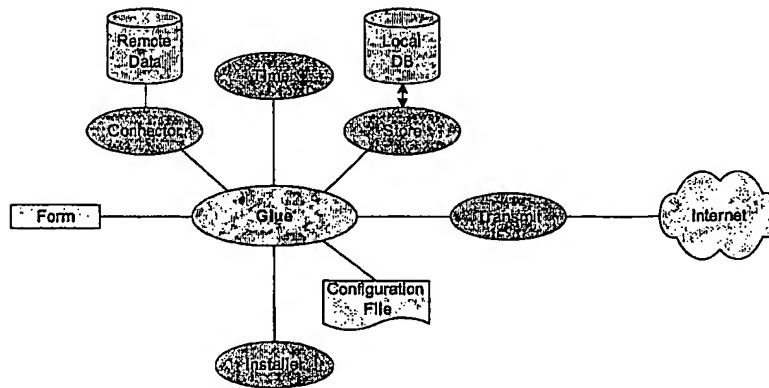
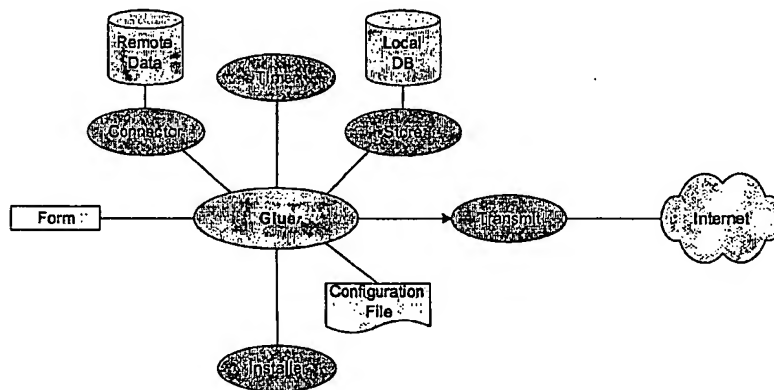


Figure 14 the sending of data bundles at set capacity levels.

23/23

6 Glue passes "Dock" command to Transmit

```
<docmd object="Transmit" command="Dock" datatype="Bundle">
```



7 Transmit sends bundle and passes command back to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue

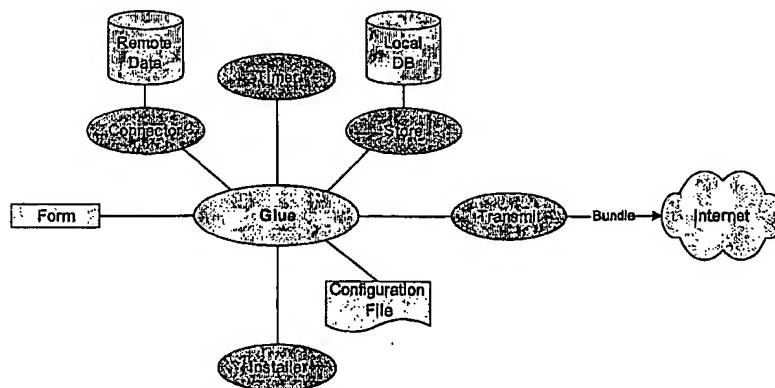


Figure 14 the sending of data bundles at set capacity levels.

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